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EMS ASPECT/IMPACT ASSESSMENT AND EMP PROCESS

Responsible Office: **Center Operations Directorate**

Approved by:

Joel B. Walker, Director

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Change Record

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1 PURPOSE

This JSC Work Instruction (JWI) identifies the requirements and procedures associated with identifying the elements of JSC's activities, products, or services that can interact with the environment (aspects) and can result in any change to the environment, whether adverse or beneficial (impacts). This procedure also provides the requirements and responsibilities for setting objectives and targets and establishing Environmental Management Programs (EMPs) to reduce negative impacts or increase positive impacts to the environment.

2 APPLICABILITY

This instruction applies to JSC and contractor organizations within the scope of the JSC EMS, including Ellington Field, Sonny Carter Training Facility, and El Paso Forward Operating Location. This JWI does not apply to White Sand Test Facility.

3 AUTHORITY

JPR 8553.1, JSC Environmental Management System

4 APPLICABLE DOCUMENTS

JPR 8550.1, Environmental Compliance Procedural Requirements

5 SAFETY PRECAUTIONS AND WARNING NOTES

None.

6 TOOLS, EQUIPMENT, AND MATERIALS

None

7 PERSONNEL TRAINING AND CERTIFICATION

Instruction on how to evaluate aspects and impacts and use of the JSC EMS Aspect Control Database is recommended but not required for EMS Liaisons. The training is available upon request by contacting the JSC Environmental Office.

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8 RESPONSIBILITIES

Overall responsibilities for implementing this work instruction are described in this section. Detailed responsibilities for conducting steps within the procedure are identified within Section 9, Procedure.

8.1 Directorate Level Organization (DLO) Management Responsibilities

DLO management shall:

- a. Maintain accurate information in the JSC EMS Aspect Control Database for activities, products and services conducted or provided within the Directorate in accordance with this procedure.
- b. Implement actions required to achieve the objectives and targets of the EMPs.
- c. Ensure that process owners follow established procedures to control environmental impacts.

8.2 JSC EMS Representative Responsibilities

The JSC EMS Representative shall:

- a. Provide technical assistance to DLO management on aspect assessment and development of EMPs;
- b. Perform an assessment and ranking of site-wide aspects at least annually; and
- c. Review priority impacts and regulatory requirements to develop recommendations for setting objectives and targets and EMPs.

8.3 Center Operations Environmental Office (EO) Responsibilities

The EO shall:

- a. Recommend regulatory compliance-driven objectives and targets that may need an EMP to achieve or maintain compliance; and
- b. Provide information to JSC organizations on changes in environmental regulations, policies, or procedures that may require organizations to re-evaluate their aspects.

8.4 Environmental Stewardship Subcommittee (ESS) Responsibilities

The ESS shall:

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- a. Evaluate priority impacts and compliance requirements to evaluate setting objectives and targets and recommending EMPs to achieve improvement; and
- b. Conduct annual reviews of the EMPs to determine the need for changes.

8.5 JSC Operations Forum (JOF) Responsibilities

The JOF shall:

- a. Review and approve (or disapprove) setting EMPs;
- b. Review the status and effectiveness of EMPs and recommend appropriate changes or termination; and
- c. Identify and assign resources for implementing EMPs.

8.6 EMS Liaison Responsibilities

The DLO EMS Liaison shall:

- a. Act as the contact or intermediary between the JSC EMS Representative and the DLO,
- b. Lead the Implementation and maintenance of JSC EMS requirements within the DLO,
- c. Lead the annual, or more frequent, review of the DLO aspects and controls within the DLO.
- d. Provide awareness level information on applicable elements of the EMS within the DLO,
- d. Act as the escort for auditors during internal and external audits, upon request, and
- e. Attend meetings with the JSC EMS Representative and other DLO Liaisons, as requested.

9 PROCEDURE

In order to set goals for improvement, JSC must first identify and understand how our operations impact the environment. Once impacts are known, then we can set goals for reducing our impacts, track the legal and other requirements associated with our activities, and develop management programs to achieve our goals.

This procedure describes the prescribed way that we conduct these activities. *NPR 8553.1, NASA Environmental Management System*, requires that we identify all of our current, past, and future activities, products, and services that can affect the environment (aspects). These must be evaluated during normal, abnormal and

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emergency conditions. Priority aspects must be evaluated for setting objectives and targets for improvement. Environmental management programs must then be established to identify our plan for achieving our objectives and targets.

9.1 Assessing Current Environmental Aspects and Impacts

JSC's organizations have identified the environmental aspects of their current activities, products or services. Potential impacts on the environment have been identified. The JSC EMS Representative has reviewed and grouped this assessment data and identified aspects that are a high priority.

This information is documented in JSC's EMS Aspect Control Database, which is available on JSC's EMS website <http://www6.jsc.nasa.gov/ja/ja13/ems.cfm>. The JSC EMS Aspect Control Database is a database that houses information related to all JSC's identified environmental aspects; including associated impacts, aspect location, initiating organization, and ranking information. The Control Database also identifies the mechanism or ways that JSC organizations implement operational control over their aspects to maintain compliance, reduce negative impacts, and enhance or maintain beneficial impacts.

All JSC organizations shall review their previously identified activities, products, and services at least annually and update the JSC EMS Aspect Control Database with current information, as needed.

NOTE: NASA and JSC define a "priority" aspect as an environmental aspect that must be managed to avoid or prevent a serious adverse environmental effect, or to create a substantial beneficial effect. A high priority aspect requires consideration to set objectives and targets and to establish Environmental Management Programs to affect and manage improvement.

9.2 Assessing Future Activities, Products, and Services

All organizations must identify the environmental aspects and evaluate environmental impacts when planning or implementing a new or different activity, product or service or when conditions change. An assessment shall be conducted in accordance with this Work Instruction when the new or changed activity, product or service is functional or there is sufficient information to conduct the EMS evaluation for environmental impacts.

A different type of assessment is conducted for new or proposed programs and projects as required by the National Environmental Policy Act (NEPA). JSC conducts these environmental reviews to determine the potential environmental impacts (ecological, cultural or socioeconomic resources) of the program or project. The procedures for conducting these environmental assessments are included in Chapter 2 of *JPR 8550.1, JSC Environmental Compliance Procedural Requirements*.

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In some cases, the NEPA assessment and the EMS assessment for environmental impacts may be done concurrently. Sometimes, there may not be enough information to complete the EMS aspect/impact evaluation during the early planning stages and the EMS assessment may need to wait until the process or program is implemented. EMS assessments may also be conducted at the same time as hazard analyses or readiness reviews.

9.3 Assessing Past Activities, Products, and Services

The JSC Environmental Office has evaluated and has managed or is continuing to manage known past aspects and impacts, in accordance with state and Federal regulations. Any newly discovered past aspects and impacts will be evaluated in the same manner. Activities related to remediation of these past aspects and impacts shall be assessed for the EMS in accordance with this Work Instruction.

9.4 Procedure for Assessing New or Changed Aspects

The following steps shall be performed when new activities, services or products are initiated within an organization or when previously assessed aspects change:

- 9.4.1 DLO Identify all the activities, products and services associated with the operations or areas that are to be assessed. Activities should be related to the organization and location in which they occur.
- 9.4.2 DLO Include activities that may occur only in abnormal or emergency conditions.
- 9.4.3 DLO Identify which of the items from 1 and 2 that could have a positive or negative effect on the environment. These elements of activities that affect the environment are called aspects. Include aspects resulting from routine off-site supplier activities, products and services while on-site.
- 9.4.4 DLO For each aspect, assign the appropriate Environmental Aspect Category (Appendix B). More than one may apply, assign all that apply.
- 9.4.5 DLO Identify any local operational controls that are in place to implement environmental requirements, mitigate negative environmental impacts, secure or improve positive environmental impacts, or to achieve improvement objectives or targets. These are the mechanisms or controls that are integrated into an organization's processes to control environmental impacts and comply with environmental requirements. Provide specific information to identify local

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operational controls. For example: list procedure names and numbers, describe the physical control, identify expertise or competence requirements, or identify monitoring or measuring requirements.

- 9.4.6 DLO Document the results of the assessment in the JSC EMS Aspect Control Database.

9.5 Rating the Environmental Impacts of Aspects

The following steps shall be followed to rank the environmental impacts of grouped, site-wide aspects.

- 9.5.1 EMS Rep Group aspect categories to determine the site-wide aspect ranking.
- 9.5.2 EMS Rep Rank each grouped aspect category according to NPR 8553.1 severity (consequences) and frequency of the potential environmental impacts.
- 9.5.3 EMS Rep Document the ranking results in the JSC EMS Aspect Control Database.

9.6 Setting Objectives and Targets and Establishing an Environmental Management Plan (EMP)

JSC will consider setting objectives (environmental improvement goals) and targets (specific, quantifiable performance requirement that needs to be set in order to achieve the objective) for each high priority impact. JSC may also set objectives and targets for other aspects in order to reduce negative impacts, increase positive impacts, or control an impact to prevent it from becoming a high priority aspect.

If objectives and targets are set, then an EMP (detailed plan to achieve objectives and targets that result in changes that benefit the environment and help achieve JSC's environmental excellence policy) will be established for each objective.

The following steps shall be followed to set objectives and targets and to establish an EMP

- 9.6.1 EMS Rep Review aspects to determine which should be considered for setting objectives and targets.
- 9.6.2 EMS Rep Identify potential environmental objectives and targets by:
- Review the results of grouped aspect ranking (high priority)
 - Review the result of grouped aspects to identify any

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negative impacts that need to be controlled or positive impacts to increase in order to achieve JSC's environmental policy (even if not rated as high priority).

- Identify any regulation requirements (such as a new regulation or Executive Order) that may require objectives and targets in order to maintain or achieve compliance.

- | | | |
|-------|---------|--|
| 9.6.3 | EMS Rep | Consider the following for each potential objectives and targets |
| | | <ul style="list-style-type: none"> - Legal and other requirements - Available technology option and infrastructure - Operational, mission, and mission-related activities - Financial resources - Interests and views of stakeholders |
| 9.6.4 | EMS Rep | Develop recommended objectives and targets and associated EMPs to forward to management for decision. |
| 9.6.5 | ESS | Reviews recommended EMPs and develop final recommended EMPs to forward to JOF for decision. Identify responsibilities and resources required to manage approved EMPs as part of the EMP decision package. |
| 9.6.6 | JOF | Approve or disapprove recommended EMPs. If disapproved due to being technically infeasible or economically unreasonable, document the rationale. Document decisions related to the EMPs in the JOF meeting minutes. |
| 9.6.7 | EMS Rep | Maintain a copy of the approved and disapproved EMPs. |

9.7 Managing the EMP through Closure or Cancellation

The following steps shall be followed to manage an established EMP through closure or cancellation:

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|-------|---------|--|
| 9.7.1 | EMS Rep | Assign an EMP Manager to each approved EMP. The proposed EMP Manager's organization must approve the assignment or an alternate EMP Manager will be proposed. The EMP Manager will identify, plan, and assist in implementation of the activities established in the EMP. Copies of EMPs can be found at http://www6.jsc.nasa.gov/ja/ja13/emsprograms.cfm |
| 9.7.2 | DLO | Implement any designated actions established in the EMP. |

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| 9.7.3 | EMP Manager | Monitor and measure EMP progress in accordance with the requirements listed in the EMP. For each EMP, provide semi-annual status reports to the EMS Representative and ESS and annual status reports to the JOF, or as requested. Provide training or awareness, as applicable, to EMS Liaisons on high priority aspects and the DLO requirements for implementing the EMP and achieving objectives and targets. |
| 9.7.4 | EMS Liaisons | Provide training or awareness to DLO employees who are responsible for implementing EMPs and general awareness to all employees on the high priority aspects. |
| 9.7.4 | EMP Manager | Re-evaluate the EMP at least annually. Recommend updates or modifications to the EMP when new impacts or other conditions are identified that affect the EMP. Present modifications to the EMP to the ESS for approval. Modify EMPs as needed when objectives and targets are not being achieved, or when it is determined that the objectives and targets cannot be achieved. If appropriate, cancel the EMP by following the EMP approval process. Close EMPs when stated targets and objectives have been achieved. |
| 9.7.5 | ESS | Review recommended modifications or cancellation of existing EMPs. Forward recommended major revisions or cancellations to EMPs to the JOF for approval, as appropriate. |
| 9.7.6 | JOF | Approve cancelled EMPs or major modifications to existing EMPs. |

9.8 Assess the Need for New EMPs

The following steps shall be followed to evaluate the need for a new EMP:

- | | | |
|-------|---------|--|
| 9.8.1 | EMS Rep | Periodically review EMPs that were not previously implemented due to lack of funding or human resources or technical infeasibility. |
| 9.8.2 | EMS Rep | At least annually re-assess DLO identified aspects and determine if they should be re-ranked for priority. When aspects are re-ranked, re-evaluate new high priority aspects for need to establish EMPs. |

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10 RECORDS

- a) Listing of organizational activities, products and services and the determination of those which have environmental impacts, identification of controls, ranking of aspects maintained in the JSC EMS Aspect Control Database; maintained by each DLO for their aspects
- b) Records of decisions made related to approval or disapproval of Environmental Management Program (EMP); maintained by the EMS Representative
- c) Copies of approved and disapproved EMPs; maintained by the EMS Representative

11 APPENDICES

Appendix A - Definitions

Appendix B - List of NASA Environmental Aspect Categories

Appendix C - Summary of Responsibilities

Appendix D - Change History Log for Precursor Document: JE9W-06, EMS Aspects/Impact Assessment and EMP Process

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Appendix A Definitions

The following defined terms are used in this document.

- a) **Aspect Assessment** – a process to identify and document JSC’s activities, products, and services, assess potential impacts on the environment, document controls, and rank the impact to determine if it is a priority impact.
- b) **Directorate Level Organization (DLO)** – Directorate, program or project office, or other functional work area that reports directly to the JSC Center Director.
- c) **Environmental Aspect** – elements of JSC’s activities, products, or services that can interact with the environment.
- d) **Environmental Impact** – any change to the environment, whether adverse or beneficial, wholly or partially resulting from JSC's activities, products, or services.
- e) **Environmental Management Program (EMP)** – the tool for continuous improvement of the JSC’s EMS. An EMP is a detailed plan to achieve the JSC’s objectives and specific quantifiable targets to control, reduce, or eliminate adverse impacts or to gain or increase beneficial impacts on the environment from our activities, products or services.
- f) **Environmental Objective** – an overall environmental goal, arising from the environmental policy that JSC sets for itself to achieve, and which is quantified where practicable.
- g) **Environmental Target** – a detailed goal, quantified where practicable, applicable to JSC, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.
- h) **High Priority Aspect** – a JSC environmental aspect that has been ranked as high priority. These aspects must be managed to avoid or prevent a serious adverse environmental effect, or create a substantial beneficial effect. A high priority impact requires consideration to set objectives and targets and to establish an environmental management program.
- i) **Impact** – see Environmental Impact.
- j) **JSC EMS Aspect Control Database** – a database that is accessible through the EMS web site and that manages the information on JSC’s aspects, impacts, controls, criteria, measuring and monitoring, impact risk ranking.
- k) **Operational Controls** – any mechanism used to limit negative impacts or increase positive impacts to the environment that is needed in order to manage JSC’s environmental policy and compliance activities. Examples of operational controls include procedures, monitoring, structural devices, and training. Sometimes referred to as local controls.

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Appendix B

List of NASA Environmental Aspect Categories

Air Emissions - stationary or point source

Air Emissions - mobile source

Air Emissions - ozone depleting substance

Air Emission - fugitive emission

Fuel, oil, and lubricant - container storage

Fuel, oil, and lubricant - storage tank

Fuel, oil, and lubricant - transformer

Fuel, oil, and lubricant - hydraulic system

Fuel, oil, and lubricant - spill prevention control and counter measure

Hazardous material - storage

Hazardous material - emergency planning and response

Hazardous material - community right-to-know

Hazardous waste - collection and storage

Hazardous waste - treatment, storage, and disposal facilities

Hazardous waste - offsite shipment and disposal

Hazardous wastes - state regulated industrial or chemically contaminated wastes

Historical, archaeological, and cultural resources

National Environmental Policy Act - environmental impacts

National Environmental Policy Act - noise

National Environmental Policy Act - environmental justice

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Natural resources - land use and resources

Natural resources - wetlands and floodplains

Natural resources - threatened and endangered species

Natural resources - wildlife

Natural resources - ecosystems

Natural resources - oceans and coastal zones

Remediation/Restoration - Comprehensive Environmental Response, Compensation, and Liability Act

Remediation/Restoration- Resource Conservation and Recovery Act

Remediation/Restoration- Tank sites

Solid Waste - general trash

Solid Waste - construction waste

Solid Waste - medical waste

Solid Waste - solid waste landfills

Sustainability - energy consumption

Sustainability - encroachment

Sustainability - facility construction, rehabilitation and modification

Sustainability - materials purchasing

Sustainability - water consumption

Toxic substances - asbestos

Toxic substances - lead paint

Toxic substances - polychlorinated biphenyls (PCBs)

Toxic substances - pesticides and herbicides

Toxic substances - radioactive materials

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Water - drinking water

Water - groundwater

Water - storm water

Water - sanitary or domestic wastewater

Water - industrial wastewater

Water - eutrophication

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Appendix C Summary of Responsibilities

Directorate Level Organization (DLO) Management Responsibilities

- a) Conducting aspect/impact assessments for any new, modified, or terminated activities, products or services;
- b) Documenting the required data in the JSC EMS Aspect Control Database;
- c) Reviewing and updating existing information in the JSC EMS Aspect Control Database at least annually;
- d) Implementing actions that are required to achieve the objectives and targets of EMPs;
- e) Ensuring that process owners follow established procedures (including any measuring and monitoring requirements) to control impacts and to achieve the targets and objectives of EMPs; and
- f) Maintaining the EMS by reviewing and updating information in the EMS Control Database at least annually and when requested by the EMS Representative due to changing requirements or procedures.

JSC EMS Representative Responsibilities

- a) Providing technical assistance to the DLO Management regarding aspect and impact assessment and the development of EMPs;
- b) Periodically reviewing the JSC EMS Aspect Control Database and determining and documenting the focus areas for any entry;
- c) Performing an environmental risk assessment and ranking of all grouped aspects in the JSC EMS Aspect Control Database and updating the ranking at least annually;
- d) Reviewing all priority impacts and evaluating the need to set objectives and targets and develop EMPs;
- e) Coordinating with the JSC Environmental Office to identify regulatory compliance-driven objectives and targets that may need EMPs;
- f) Recommending objectives, targets and EMPs for priority aspects and regulatory compliance-driven objectives and targets to the Environmental Stewardship Subcommittee;
- g) Coordinating with the to facilitate review and approval of EMPs;
- h) Maintaining a list of all ongoing EMPs, providing periodic progress reports to the Environmental Stewardship Subcommittee, and facilitating annual reviews of EMPs; and

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- i) Coordinating with the DLO Management to disseminate information on new and changed laws and regulations and NASA and JSC environmental policies and procedures that may affect assessment of aspects and impacts.

Environmental Office Responsibilities

- a) Recommending regulatory compliance-driven objectives and targets that may need an EMP to achieve or maintain compliance; and
- b) Providing updated information on changes in legislation, regulations, NASA or JSC environmental policies, and environmental practices and procedures that could require organizations to re-evaluate their aspects.

Environmental Stewardship Subcommittee Responsibilities

- a) Reviewing all priority impacts and regulatory compliance driven requirements for setting objectives and targets;
- b) Developing recommended EMPs that are needed for priority impacts and regulatory compliance-driven objectives and targets, and recommending these EMPs for approval by the JSC Ops Forum; and
- c) Conducting annual reviews of EMPs to assess whether the objectives and targets are being achieved and determining if new or modified EMPs are needed to meet objectives and targets.

JSC Ops Forum

- a) Reviewing and approving (or disapproving) the objectives and targets and EMPs;
- b) Reviewing and approving (or disapproving) the determinations when decisions are made not to set objectives and targets and not to implement EMPs;
- c) Periodically reviewing the status and effectiveness of EMPs and recommending changes or termination, as appropriate; and
- d) Identifying and assigning resources when needed to implement EMPs.

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Appendix D

Change History Log for Precursor Document: JE9W-06, EMS Aspects/Impact Assessment and EMP Process

Change Record

Rev.	Date	Originator/Phone	Description
Basic	04/2005	M. Jo Kines/x33218	Initial Release
A	08/2005	M. Jo Kines/x33218	Update to clarify local operational controls requirements as result of Audit C5-05 finding, update for JSC Management Council (replaces QSMR and ESC), and minor wording changes.